

CLAIMS

1. An aerial work apparatus comprising:

- a base;
- a boom mounted to the base;
- a platform attached to the distal end of the boom;
- a boom mechanism operationally attached to the boom for positioning the platform;
- a boom control module mounted with respect to the platform for controlling the boom mechanism;
- a vertical load-sensing mechanism mounted at the platform for measuring the platform load and generating a load signal based thereon; and
- a controller operationally attached to the boom mechanism and the boom control module, whereby the boom control module controls the boom mechanism through the controller and wherein the controller receives the load signal and at least one position signal relating to the position of the platform and generates at least one control signal based thereon.

2. The aerial work apparatus of claim 1 wherein:

- the control signals generated by the controller include a limit signal based on a determination of overcapacity; and
- the boom control module receives the limit signal to halt overcapacity movement of the boom, wherein overcapacity movement includes extension of the boom and lowering of the boom.

3. The aerial work apparatus of claim 1 further comprising a informational display console mounted with respect to the platform and wherein:

- the control signals generated by the controller include informational signals based on a determination of platform load and platform capacity; and
- the informational display console receives the informational signals and displays the platform load and the platform capacity in response thereto.

4. The aerial work apparatus of claim 3 wherein the informational display console receives the limit signal and displays an overcapacity message in response thereto, thereby alerting the operator that the boom control module has been overridden.

5. The aerial work apparatus of claim 4 wherein the informational display console is integral with the boom control module.

6. The aerial work apparatus of claim 1 further comprising:

- a platform support member attached to the platform; and
- a vertical support column attached at the distal end of the boom and holding the load-sensing mechanism in position such that the load-sensing mechanism fully supports the platform support member, thereby to sense the platform load.

7. The aerial work apparatus of claim 6 wherein the load-sensing mechanism includes a load cell.

8. The aerial work apparatus of claim 7 wherein the load-sensing mechanism includes a support bushing, whereby the load-sensing mechanism makes contact with the platform support member through the support bushing to focus the platform load upon the load cell.

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9. The aerial work apparatus of claim 8 wherein the load cell is a hydraulic load cell.

10. The aerial work apparatus of claim 6 further comprising at least two sleeve bearings attached to the platform and having an engagement with the support column that is substantially frictionless.

11. The aerial work apparatus of claim 10 wherein the sleeve bearings are pivotally engaged with the support column.

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12. The aerial work apparatus of claim 6 wherein:

- the control signals generated by the controller include a limit signal based on a determination of overcapacity; and
- the boom control module receives the limit signal to halt overcapacity movement of the boom, wherein overcapacity movement includes extension of the boom and lowering of the boom.

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13. The aerial work apparatus of claim 12 wherein the boom control module includes an informational display console and wherein:

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- the control signals generated by the controller include informational signals based on a determination of platform load and platform capacity; and
- the informational display console receives the informational signals and displays the platform load and the platform capacity in response thereto.

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14. The aerial work apparatus of claim 13 wherein the informational display console receives the limit signal and displays an overcapacity message in response thereto, thereby alerting the operator that the boom mechanism has been overridden.

5 15. In an aerial work apparatus having a boom mounted to a base and a platform attached to the distal end of the boom, the improvement comprising:

- a load-sensing mechanism at the platform for measuring the platform load;
- a platform support member attached to the platform; and
- 10 • a vertical support column attached at the distal end of the boom and holding the load-sensing mechanism in position such that the load-sensing mechanism fully supports the platform support member, thereby to sense the platform load.

15 16. The aerial work apparatus of claim 15 wherein the load-sensing mechanism includes a load cell.

17. The aerial work apparatus of claim 16 wherein the load-sensing mechanism includes a support bushing, whereby the load-sensing mechanism makes
20 contact with the platform support member through the support bushing to focus the platform load upon the load cell.

18. The aerial work apparatus of claim 17 wherein the load cell is a hydraulic load cell.

25 19. The aerial work apparatus of claim 15 further comprising at least two sleeve bearings attached to the platform and having an engagement with the support column that is substantially frictionless.

30 20. The aerial work apparatus of claim 19 wherein the sleeve bearings are pivotally engaged with the support column.